While you are allowed to discuss course material and general solution strategies with classmates, you may not use other resources (e.g. searching online), and you must work alone when formulating and writing up your solutions (refer to the syllabus for the full details on homework policies). When a problem asks for an algorithm, to receive full credit you must: (a) design an efficient algorithm, i.e. one with good runtime; (b) prove the algorithm’s correctness; and (c) analyze the running time of the algorithms. Partial credit is possible though, so please provide whatever solution you arrive at even if it is not as efficient as it might be, or is incomplete but provides some insight into the problem’s structure. Homeworks should be turned in either in person at my office (AVW 3267) or by email.

Please write solutions neatly or typeset them, and staple your work together.

1. (10 points/extra credit) Fill out the course evaluation online, and then copy and sign the following statement in your homework: “I have filled out the 451/Spring 2014 course evaluation.”

NOTE: Each of the following asks you to prove a problem is NP-Complete. You may find the list of NP-Complete problems in Section 8.10 of the text helpful when selecting a candidate problem to use in the reduction for the NP-Hardness portion of your proof.

2. (20 points) Complete problem 8.6 from KT.

3. (20 points) Complete problem 8.8 from KT.

4. (20 points) Complete problem 8.17 from KT.